

Alaska Region Tsunami Warning Operations

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1.1 General Responsibilities. This supplement describes responsibilities and provides guidance to NWS offices in Alaska for planning for and taking action when there is a threat of a tsunami.

The West Coast and Alaska Tsunami Warning Center (WC/ATWC), located in Palmer, Alaska, is the official source of all tsunami watches, warnings, and supplemental information bulletins for Alaska. See Appendix A for a sample Tsunami Watch/Warning product issued by WC/ATWC.

The following Alaska Region Weather Forecast Offices (WFO) and Weather Service Offices (WSO) have dissemination responsibility when tsunami watches or warnings are issued for their area as described in this supplement:

- WFO Anchorage
- WFO Juneau
- WSO Annette
- WSO Cold Bay
- WSO King Salmon
- WSO Kodiak
- WSO St. Paul
- WSO Valdez
- WSO Yakutat

These offices are also responsible for ensuring the readiness of office systems and staff through routine operational drills, coordinating activities to raise community awareness and preparedness for tsunami events, and promoting the TsunamiReady Program (<http://wcatwc.arh.noaa.gov/tsunamiready/tready.htm>).

Alaska's Division of Homeland Security and Emergency Management (DHS&EM) has the responsibility to develop warning procedures, plans, and evacuations for local communities. The Alaska Region NWS offices should cooperate with the DHS&EM and, where possible, aid in warning dissemination. Procedures for dissemination will necessarily vary with location and the office manager should coordinate with local officials. Established procedures will be included in the Station Duty Manual.

Cancellation of a tsunami warning bulletin will originate from the WC/ATWC. However, the ultimate determination of an "ALL CLEAR" status will be made by state/local emergency officials who have the responsibility for evacuations.

7. Tsunami Bulletin Dissemination. Tsunami watches, warnings, and advisories for Alaska, British Columbia, and the west coast of the United States are issued under AWIPS heading TSUWCA. The WC/ATWC also issues Tsunami Information Bulletins (TIBWCA) and Earthquake Messages (EQIAKX and EQIWOC). Specific message definitions for these products are provided at:

<http://wcatwc.arh.noaa.gov/Products/msgdefs.htm>.

Communications paths for these messages are described at:

<http://wcatwc.arh.noaa.gov/Products/messagesumm.htm>.

7.1 Tsunami Watches and Warnings. Notification of the tsunami watch/warning will be relayed from the WC/ATWC to WFO Anchorage and WFO Juneau by voice announcement on the National Warning System (NAWAS)/Alaska Warning System (AKWAS). If the NAWAS/AKWAS system is inoperative, commercial telephone should be used as a back up. The initial tsunami watch/warning bulletin (AWIPS heading: TSUWCA) will coincide with this notification, received either just prior to or moments after the NAWAS/AKWAS announcement.

Tsunami watches and warnings will be handled and disseminated by NWS offices with the highest possible priority. The following procedures will be followed upon receipt of a tsunami watch or warning from the WC/ATWC. (Note: Dissemination paths are also summarized in Appendix C.)

7.1.1 Telephone Fan-Out. When a tsunami warning is issued by the WC/ATWC, WFOs Anchorage and Juneau will notify those WSOs with NOAA Weather Radio, HF, and/or VHF broadcast responsibility in their area, and/or whose listening area is within the tsunami watch/warning area for which a tsunami watch/warning has been issued. WFO Anchorage will notify WSOs Kodiak, King Salmon, Cold Bay, St. Paul, and Valdez. WFO Juneau will notify WSOs Annette and Yakutat.

7.1.2 NOAA Weather Radio (NWR). Tsunami products will be distributed over the NWR in Alaska according to the following procedures:

- a. Edit the TSUWCA product for information specific to tsunami watches and/or warnings effective in the WFO/WSO area of responsibility. Be sure to include the “EVALUATION” paragraph as this provides call-to-action information.
- b. Tsunami watches and warnings may be manually recorded, but should be broadcast without delay, using appropriate SAME codes and the 1050 Hz warning alarm on NWR transmitters with coastal public and marine zone coverage. This will activate the Emergency Alert System (EAS) where available, as defined by the State EAS Plan.

Special instructions for WFO Anchorage: WFO Anchorage is responsible for activating EAS statewide during tsunami events. This means programming the Anchorage NWR transmitter to use the “all Alaska” Federal Information Processing System (FIPS) code (i.e., 02000) rather than the code for the Anchorage Municipality.

- c. As new messages concerning the tsunami event are received from the WC/ATWC, follow the procedure in step a., replacing the previous message with the new one.
- d. The final message from the WC/ATWC concerning the tsunami event should be recorded and transmitted for approximately 15 minutes. Normal programming should then be resumed.

7.1.3 High Frequency (HF) and Very High Frequency (VHF) Marine Radio. The offices at Annette, Cold Bay, King Salmon, Kodiak, and Yakutat will disseminate tsunami bulletins via HF and VHF marine radio. St. Paul will disseminate tsunami bulletins via VHF marine radio.

7.2 Updates to Tsunami Watches/Warnings. Updated tsunami watches/warnings (also issued using AWIPS product heading TSUWCA) may be issued by the WC/ATWC to further refine watch/warning areas and forecast times of arrival. Follow similar procedures as outlined in section 7.1 (above).

7.3 Tsunami Advisories. The WC/ATWC may issue Tsunami Advisories (AWIPS heading: TIBWCA) concerning tsunami events for which warnings are issued by the Richard H. Hagemeyer Pacific Tsunami Warning Center (PTWC) in Ewa Beach, Hawaii, but which are generated far enough away that the west coast and Alaska do not fall within the watch/warning area. Upon receipt of a tsunami advisory from the WC/ATWC, WFOs and WSOs may broadcast this information over NWR and/or VHF/HF, based upon local customer requirements.

7.4 “ALL CLEAR.” The WC/ATWC is responsible for issuing tsunami watch/warning cancellation bulletins (TSUWCA) and final information supplements, but local

emergency management authorities are responsible for determining the final “ALL CLEAR.” An example cancellation bulletin is given in Appendix B.

7.5 Acknowledgment of Tsunami Bulletins. WFOs and WSOs will acknowledge the receipt of initial watches, warnings, cancellations, and test products from WC/ATWC as quickly as possible, using the AWIPS product heading: TMAXXX (where “XXX” = WFO/WSO identifier). In the acknowledgment message, provide the time of receipt (Z), WFO/WSO name (or 3-letter ID), time of fan-out calls to WSOs where applicable, and last name of the responding individual.

9. Drills. Drills to test the communications system between WC/ATWC, WFOs, WSOs, and other government entities such as DHS&EM and the U.S. Coast Guard will be conducted monthly without prior notification. The procedures for these drills are given in Appendix D. Offices participating in the monthly communications test as outlined in Appendix D will provide a reply to the WC/ATWC.

Appendix A – Example Initial Tsunami Watch/Warning Bulletin

WEPA41 PAAQ 021938

TSUWCA

TO - TSUNAMI WARNING SYSTEM PARTICIPANTS IN
ALASKA/BRITISH COLUMBIA/WASHINGTON/OREGON/CALIFORNIA
FROM - WEST COAST AND ALASKA TSUNAMI WARNING CENTER/NOAA/NWS
SUBJECT - TSUNAMI WARNING BULLETIN - INITIAL
BULLETIN NUMBER 1
ISSUED 06/02/2004 AT 1938 UTC

...A TSUNAMI WARNING IS IN EFFECT FOR THE COASTAL AREAS
FROM POINT SUR-CA. TO LANGARA I.-BC. INCLUSIVE...

...A TSUNAMI WATCH IS IN EFFECT FOR THE COASTAL AREAS FROM
THE CALIFORNIA-MEXICO BORDER TO POINT SUR-CA. AND FROM
LANGARA I.-BC. TO SITKA-AK...

...AT THIS TIME THIS BULLETIN IS FOR INFORMATION ONLY FOR
OTHER AREAS OF ALASKA...

EARTHQUAKE DATA

PRELIMINARY MAGNITUDE - 7.2

LOCATION - 45.3N 124.0W - 95 MILES NW OF EUGENE-OR.
70 MILES SW OF PORTLAND-OR.

TIME - 1130 ADT 06/02/2004
1230 PDT 06/02/2004
1930 UTC 06/02/2004

EVALUATION

IT IS NOT KNOWN - REPEAT NOT KNOWN - IF A TSUNAMI EXISTS BUT A
TSUNAMI MAY HAVE BEEN GENERATED. THEREFORE PERSONS IN LOW
LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR
LOCAL EMERGENCY OFFICIALS. PERSONS ON THE BEACH SHOULD MOVE TO
HIGHER GROUND IF IN A WARNED AREA. TSUNAMI WAVE HEIGHTS CANNOT BE
PREDICTED. TSUNAMIS MAY BE A SERIES OF WAVES WHICH COULD BE
DANGEROUS FOR SEVERAL HOURS AFTER THE INITIAL WAVE ARRIVAL.

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PZZ130-131-133-134-132-135-150-153-156-110-250-210-255-350-
353-356-450-455-550-530-535-555-WAZ001-002-005-006-007-008-
009-010-011-013-014-015-016-021-ORZ001-002-021-022-CAZ001-
002-005-007-006-075-074-009-022038-
COASTAL AREAS FROM POINT SUR-CA. TO LANGARA I.-BC.
INCLUSIVE.

...A TSUNAMI WARNING IS IN EFFECT FOR THE COASTAL AREAS
FROM POINT SUR-CA. TO LANGARA I.-BC. INCLUSIVE...

ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

CHARLESTON-OR	1331 PDT JUN 2	ASTORIA-OR	1402 PDT JUN 2
SEASIDE-OR	1332 PDT JUN 2	TOFINO-BC	1410 PDT JUN 2
CRESCENT CITY-CA	1351 PDT JUN 2	SAN FRANCISCO-CA	1502 PDT JUN 2
NEAH BAY-WA	1400 PDT JUN 2	LANGARA-BC	1505 PDT JUN 2

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PKZ032-031-042-034-033-035-041-036-PZZ555-670-673-650-655-
750-AKZ023-024-025-026-028-029-027-CAZ009-034-035-039-040-
046-041-042-043-022038-
COASTAL AREAS FROM THE CALIFORNIA-MEXICO BORDER TO POINT
SUR-CA. AND FROM LANGARA I.-BC. TO SITKA-AK.

...A TSUNAMI WATCH IS IN EFFECT FOR THE COASTAL AREAS FROM
THE CALIFORNIA-MEXICO BORDER TO POINT SUR-CA. AND FROM

LANGARA I.-BC. TO SITKA-AK...

ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

SAN PEDRO-CA	1540 PDT JUN 2	LA JOLLA-CA	1554 PDT JUN 2
SITKA-AK	1452 ADT JUN 2	KETCHIKAN-AK	1518 ADT JUN 2

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PKZ176-175-172-170-171-155-150-132-136-138-137-130-141-140-
120-121-129-127-125-126-128-052-051-053-022-012-043-013-
011-021-AKZ191-185-181-171-145-111-101-121-125-131-135-017-
020-018-019-021-022-022038-

COASTAL AREAS FROM SITKA-AK. TO ATTU-AK.

...TSUNAMI INFORMATION STATEMENT...

NO - REPEAT NO - TSUNAMI WATCH OR WARNING IS IN EFFECT FOR
THE COASTAL AREAS FROM SITKA-AK. TO ATTU-AK.

FOR INFORMATION ONLY - ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

YAKUTAT-AK	1546 ADT JUN 2	SAND PT.-AK	1646 ADT JUN 2
JUNEAU-AK	1557 ADT JUN 2	DUTCH HARBOR-AK	1704 ADT JUN 2
KODIAK-AK	1611 ADT JUN 2	HOMER-AK	1721 ADT JUN 2
SEWARD-AK	1613 ADT JUN 2	COLD BAY-AK	1722 ADT JUN 2
VALDEZ-AK	1630 ADT JUN 2	ADAK-AK	1729 ADT JUN 2
CORDOVA-AK	1640 ADT JUN 2	SHEMYA-AK	1810 ADT JUN 2

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THE PACIFIC TSUNAMI WARNING CENTER AT EWA BEACH HAWAII WILL
ISSUE BULLETINS FOR OTHER AREAS OF THE PACIFIC.

BULLETINS WILL BE ISSUED HOURLY OR SOONER IF CONDITIONS
WARRANT. THE TSUNAMI WATCH/WARNING WILL REMAIN IN EFFECT
UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE
[HTTP://WCATWC.ARH.NOAA.GOV](http://WCATWC.ARH.NOAA.GOV) FOR MORE INFORMATION AND ETA SITES.

Appendix B – Example Tsunami Watch/Warning Cancellation Bulletin

WEPA41 PAAQ 021955

TSUWCA

TO - TSUNAMI WARNING SYSTEM PARTICIPANTS IN
ALASKA/BRITISH COLUMBIA/WASHINGTON/OREGON/CALIFORNIA
FROM - WEST COAST AND ALASKA TSUNAMI WARNING CENTER/NOAA/NWS
SUBJECT - TSUNAMI WARNING BULLETIN - FINAL
BULLETIN NUMBER 2
ISSUED 06/02/2004 AT 1955 UTC

...THE TSUNAMI WARNING AND WATCH STATUS IS CANCELED FOR
CALIFORNIA - OREGON - WASHINGTON - BRITISH COLUMBIA - AND
ALASKA...

EARTHQUAKE DATA

PRELIMINARY MAGNITUDE - 7.2
LOCATION - 45.3N 124.0W - 95 MILES NW OF EUGENE-OR.
70 MILES SW OF PORTLAND-OR.
TIME - 1130 ADT 06/02/2004
1230 PDT 06/02/2004
1930 UTC 06/02/2004

EVALUATION

NO DESTRUCTIVE TSUNAMI HAS BEEN RECORDED. NO TSUNAMI DANGER
EXISTS FOR ALASKA - BRITISH COLUMBIA - WASHINGTON - OREGON OR
CALIFORNIA. LOCAL AUTHORITIES CAN ASSUME ALL CLEAR UPON
RECEIPT OF THIS BULLETIN.

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PKZ051-053-022-012-043-013-011-021-032-031-042-034-033-035-
041-036-PZZ130-131-133-134-132-135-150-153-156-110-250-210-
255-350-353-356-450-455-550-530-535-555-670-673-650-655-
750-AKZ017-020-018-019-021-022-023-024-025-026-028-029-027-
WAZ001-002-005-006-007-008-009-010-011-013-014-015-016-021-
ORZ001-002-021-022-CAZ001-002-005-007-006-075-074-009-034-
035-039-040-046-041-042-043-022055-
COASTAL AREAS OF CALIFORNIA - OREGON - WASHINGTON - BRITISH
COLUMBIA - AND ALASKA.

...THE TSUNAMI WARNING AND WATCH STATUS IS CANCELED FOR
CALIFORNIA - OREGON - WASHINGTON - BRITISH COLUMBIA - AND
ALASKA...

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THE PACIFIC TSUNAMI WARNING CENTER WILL ISSUE A FINAL BULLETIN.

THIS WILL BE THE LAST WEST COAST AND ALASKA TSUNAMI WARNING
CENTER WATCH/WARNING BULLETIN ISSUED FOR THIS EVENT.
THIS INFORMATION IS ALSO POSTED AT [HTTP://WCATWC.ARH.NOAA.GOV](http://WCATWC.ARH.NOAA.GOV).

Appendix C – Dissemination Plan

Office	Transmitters	Source of Initial Notification	Source of Warning Messages and Cancellation
Anchorage	Anchorage Dutch Harbor Homer Seward Kenai/Soldotna Whittier	Received from WC/ATWC via NAWAS/AKWAS	AWIPS
Juneau	Juneau Haines/Skagway Sitka Wrangell Ketchikan Craig	Received from WC/ATWC via NAWAS/AKWAS	AWIPS
Kodiak	Kodiak NWR HF and VHF	WFO Anchorage	WSO Net, DAWN Service A and Service B
Yakutat	Yakutat NWR HF and VHF	WFO Juneau	WSO Net, DAWN Service A and Service B
Annette	HF and VHF	WFO Juneau	WSO Net, DAWN Service A and Service B
Valdez	None	WFO Anchorage	WSO Net, DAWN Service A and Service B
Cold Bay	HF and VHF	WFO Anchorage	WSO Net, DAWN Service A and Service B
King Salmon	HF and VHF	WFO Anchorage	WSO Net, DAWN Service A and Service B
St. Paul	VHF	WFO Anchorage	WSO Net, DAWN Service A and Service B

Appendix D – Monthly Tsunami Communications Test Procedures Plan

Tsunami Drill Initiation: The WC/ATWC will initiate the test with calls to WFO Anchorage and WFO Juneau over the NAWAS/AKWAS system giving the following message:

.....8 second bell.....

THIS BELL IS FOR THE ANCHORAGE AND JUNEAU WEATHER FORECAST OFFICES, U.S. COAST GUARD JUNEAU ALASKA, AND AK DEPT OF HOMELAND SECURITY AND EMERGENCY MANAGEMENT - ALL OTHERS DISREGARD.

THIS IS A TEST OF THE ALASKA WARNING SYSTEM FOR DISSEMINATING TSUNAMI WARNING INFORMATION. DURING AN ACTUAL TSUNAMI WARNING ALL STATIONS ON THIS NETWORK WILL BE ALERTED TO IMMINENT VOICE AND HARD COPY BROADCAST OF TSUNAMI WATCH AND WARNING INFORMATION. PLEASE INITIATE YOUR LOCAL PROCEDURES FOR THIS TEST.

ANCHORAGE WEATHER - ACKNOWLEDGE <ANCHORAGE WFO RESPONSE>
JUNEAU WEATHER - ACKNOWLEDGE <JUNEAU WFO RESPONSE>
JUNEAU COAST GUARD - ACKNOWLEDGE <COAST GUARD RESPONSE>
AK'S DIV OF HOMELAND SECURITY AND EMERGENCY MANAGEMENT -
ACKNOWLEDGE <DHS&EM RESPONSE>

WFOs Anchorage and Juneau should telephone the test message to the WSOs in their areas of responsibility. Normally, no test message should be transmitted on NWR, nor will the warning alarm be activated. Occasionally, tests of the entire Tsunami Warning System will be invoked. In this case, Alaska Region Headquarters will direct WFOs and WSOs to test the warning alarms after coordinating with DHS&EM and the State EAS Committee.

After the transmission of the test message over NAWAS/AKWAS, WC/ATWC should send the following messages over DAWN Service A and Service B.

WEPA41 PAAQ
TSUWCA

FROM: NWS/WEST COAST AND ALASKA TSUNAMI WARNING CENTER PALMER AK
TO: TSUNAMI WARNING SYSTEM PARTICIPANTS IN ALASKA/BRITISH
COLUMBIA/WASHINGTON/OREGON/CALIFORNIA
SUBJECT: TSUNAMI DUMMY

THIS IS A TEST TO DETERMINE TRANSMISSION TIMES INVOLVED IN THE DISSEMINATION OF TSUNAMI WATCH AND WARNING INFORMATION. RESPONSES ARE REQUIRED FROM:

1. ALL NATIONAL WEATHER SERVICE FORECAST OFFICES IN ALASKA - WASHINGTON - OREGON AND CALIFORNIA
2. ALASKA WEATHER SERVICE OFFICES AT KING SALMON, COLD BAY, KODIAK, VALDEZ, YAKUTAT, ANNETTE, AND ST. PAUL, AND USAF 11TH RESCUE COORDINATION CENTER AT FORT RICHARDSON.
3. STATE WARNING POINTS OR EOC'S AT FORT RICHARDSON AK, CAMP MURRAY WA, SALEM OR, SACRAMENTO CA, AND THE PROVINCIAL EMERGENCY PREPAREDNESS PROGRAMME BC.
4. U.S. COAST GUARD 11TH, 13TH, AND 17TH DISTRICT OFFICES, KODIAK COMMSTA AND CAMSPAC POINT REYES CA.

5. FAA REGIONAL OPERATIONS CENTERS AT ANCHORAGE, LOS ANGELES, AND SEATTLE.
FAA AUTOMATED FLIGHT SERVICE STATIONS AT KENAI AND JUNEAU.

RESPONSES SHOULD INCLUDE:

- A. TIME-OF-RECEIPT
- B. AGENCY NAME
- C. EMAIL ADDRESS
- D. PHONE NUMBER

WEATHER SERVICE OFFICES SHOULD RESPOND IN ACCORDANCE WITH LOCAL POLICY. ALL OTHERS SHOULD REPLY BY ONE OF THE AVAILABLE METHODS BELOW:

EMAIL ADDRESS: WCATWC@WCATWC.GOV
AFTN ADDRESS: PAAQYQYX
FAX: 907-745-6071

NNNN

Reply to Test: WFOs Anchorage and Juneau should report test results via AWIPS following the procedure outlined in Section 7.5 after completing telephone calls to designated WSOs and confirming message receipt. WSOs at Annette and Kodiak may also receive a call from the FAA verifying receipt. Acknowledgment that the calls were made and time the message was received should be included in the response. WSOs should respond to the test via WSONet using the Forecast Prep Program after receiving call(s) and the message. If the WSONet is inoperative, DAWN should be used as a back up.

Acknowledgment by WSOs should contain the time the telephone call was received from the WFO, and the FAA if they receive one, and the time the message was received. After a reasonable time, if no call or message has been received, a negative reply should be sent. If a call is received after a negative report has been filed, send another acknowledgment giving the time of receipt and reason for delay if known.